n the first day of class I ask my woodworking students if they've had a kickback on the tablesaw. I always get a fair number of hands in the air, but few of the students can tell me what happened. And often those who have had the unsettling experience of carving a nice, deep furrow in a piece of wood and having

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Tablesaw

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Many have experienced it,

it fly across the shop don't usually know what caused it. It all happens so fast that it's over by the time they realize it's occurred.

Before I let my students get near a tablesaw, I do a little dog-and-pony show to demonstrate the dangers of kickback. Using styrofoam to represent a piece of plywood, I show how the cut should be made and then what occurs if the piece drifts away from the rip fence. Crouching out of the flight path, I simply let go of the piece for a second, and off it goes.

A kickback occurs when the leading corner of a piece being cut rotates away from the rip fence. The piece then gets caught up between the back of the blade and the fence. As the back of the blade—the part that cuts upward—begins to gnaw into the freshly cut edge of the piece, the piece quickly rotates, getting caught diagonally between the fence and the blade. The corner of the piece closest to the operator and against the rip fence is the pivot point around which a radius cut is made. The piece then acts like a pole-vaulter. Rotating further and moving faster now, the piece rides up and over the blade and is hurtled into the air to the left side of the blade. If you're lucky, it will fly over your left shoulder. If you're not lucky, a board with a few horsepower of force behind it will hit you. This is also why it is such a bad idea to stand to the left of the operator and watch him work.

Afterward, you'll usually spot a crescentshaped cut on the bottom of the piece. This crescent cut is the result of the piece rotating as it crosses over the top of the blade.

IN A BLINK OF AN EYE,

The authorstands in a normal position to begin the cut, but for demonstration purposes, he moves out of the way before allowing the workpiece to kick back. Do not try this yourself.

As the piece veers slightly away from the fence, it binds up between the fence and the blade. Though the gap between the

fence and the piece is too small for the camera to pick up, it is enough to cause plenty oftrouble. The back of the blade lifts the piece



A shopmade splitter

BY KELLY MEHLER

Most woodworkers understand the importance of a zero-clearance insert and either buy blanks or make their own. To add a splitter to one of these inserts, I just glue a piece of wood Into the slot behind the blade. The splitter stock should be the same thickness as the blade and should fit in the mating slot the raised blade cuts in the throat plate. The splitter is most effective when it is placed closest to the back of the blade. Because the blade progresses toward the back of the insert as it is raised for thicker cuts, I suggest at least two inserts—one for cutting thin stock, up to about 1 in., and another for thick stock.

To make an insert for thick stock, you must elongate the slot by flipping the insert end for end and then raising the blade. This allows you to place the splitter farther back on the insert. I always drill a finger hole in the insert for easy removal. A short adjustment screw can be embedded into the side and/or end of the insert to take up any play in the fit, and the splitter can be sanded.

The important thing is to align the right edge of the splitter

Kickback

but few know why it happens

sure the piece is firmly in contact with the fence throughout the cut. The critical time is often just after the front of the blade has cut all the way through the piece. The waste lies on the table rattling against the blade, distracting you from the very real task of keeping the piece firmly against the rip fence until it is well past the blade. A moment's inattention and...

After the class understands the danger of kickback, I repeat the operation with

YOU HAVE TROUBLE

off the table, with the back corner of the piece (against the fence and closest to the operator) acting as a pivot point.

The piece rides across the spinning blade and is catapulted into the air.

With a few horsepower of force behind it, the piece bullets across the room until it crashes into something. The author would have risked being hit had he stood where an operator normally stands.

The crescent shape on a piece that kicks back is the result of the piece riding across the top of the spinning blade. Using a splitter almost eliminates the chance of this happening. It's as if you drew a circle with a compass, putting the center point at the corner closest to the operator and against the fence.

Certain types of cuts are more prone to kickback than others, A square piece being trimmed is the most likely to cause trouble, because any drift away from the fence will cause the piece to bind. Any piece cut against the rip fence that is either square or rectangular (with a width approaching at least half or more of its length) is a very hazardous cut. Typically troublesome pieces are drawer bottoms and small parts.

But if the piece is kept solidly against the rip fence and pushed all the way through the cut and beyond the blade, it's unlikely that a kickback will occur. Keep your eyes on the rip fence just past the blade to make the splitter and blade guard in place. When I let go this time, nothing happens. Then I use a push stick to force the piece away from the rip fence and into the blade. Again, nothing happens. This is because the splitter prevents the rotation of the piece away from the fence.

Kickbacks can be prevented. They are virtually impossible with an antikickback splitter in place. The splitter keeps the stock solidly against the rip fence and prevents any rotation toward the blade. Without this rotation, kickback is virtually unheard of. Use the splitter that came with your saw, buy an after-market splitter or make one (see the story below), but don't make cuts on the tablesaw without one.

Lon Schleining teaches woodworking and builds custom stairs in Long Beach, Calif.

with the right side of the blade (the side closest to the fence). This keeps the workpiece against the fence for a smoother cut. Also, it virtually eliminates the chance of kickback.

I make the splitter by slicing a piece of hardwood and trimming it until I get a tight fit in the slot. Then I glue it in place. I make my splitters out of hardwood, but there is no reason why they could not be made of aluminum, plastic or any other durable material.

Kelly Mehler is a woodworker in Berea, Ky., and the author of **The Table Saw Book** (The Taunton Press, 1993).



Simple but safe. A splitter is essential to any safe shop, but it doesn't have to cost a thing. Flip a zeroclearance insert end for end and raise the blade to elongate the slot. Fit a piece of hardwood tightly into the slot and then glue it in place.